Creating Custom Studies

The custom study feature allows you to define and display customized studies. Once a custom study has been defined, it can be displayed like any other CQG study.

1. Click the **System** button to display a menu.
2. Select **Define User Formulas**.
3. Select the **Custom Studies** tab.

Define Custom Studies using the **Define User Formulas** window. Defining a custom study involves entering the following:

- A Study Name
- A Study Name Abbreviation (if desired)
- Study Curve Names (instead of the c1 ,c2, c3, and so forth, default names)
- Study Curve Formulas

To enter a custom study name and abbreviation

1. Click the **New** button in the **Study Names** group on the **Custom Studies** tab in the **Define User Formulas** window.
2. Enter a study name. The system automatically enters an abbreviation, but you can Enter a study abbreviation, if you want to.
3. Click in the **New Study Abbrev and Curve Name** box and enter no more than 7 characters. The custom study abbreviation must start with a letter rather than a number or symbol. CQG uses the abbreviation name when you use one custom study as the basis for another custom study.
4. Click the **OK** button.

To establish curves for a custom study

Establishing curves for a custom study involves assigning names and defining the curve characteristics.

If the selected custom study does not already have curves defined, the Curves For: [study name] information is not displayed.

1. On the **Custom Studies** tab of the **Define User Formulas** window, left click the **Show Curves** button.

   The **Curves for: [Study Name]** information appears under the **Permissions** button.
2. Click the **New** button under **Curves for: [Study Name]**.
3. Enter a name for the new curve.
4. Click the **OK** button to close the **Create a Study Curve** window.

To enter a curve formula

The **Curve Formula Editor** displays the formula or expression associated with the study curve selected in the Curves for section. It is empty when a new curve name is initially selected.

The editor consists of the editor area, where the selected study curve's formula is shown, and several **Editor** buttons. The expressions can be modified directly in the Editor, or they can be modified using the **Editor** buttons.

1. If the **Curves for: [study name]** information is not already displayed, left click the **Show Curves** button.
2. Click the study name in the **Study Names** list.
3. Click the **New** button in the **Curves for** section.
4. Enter a name for the new study curve.
5. Enter the desired **Curve Formula** directly in the **Formula for Curve…** section.

   Or

6. Click the **Toolbox** button to display the **Formula Toolbox** window and use the Toolbox to define the curve formula.

Custom Studies use scales that are unique to that study. However, an operator can be added to a Custom Study curve formula to force the Custom Study to share the scale of the underlying chart.

Currently, the **ShareScale** operator is added in the **Custom Study curve formula**. The **ShareScale** operator has two parameters separated by a comma. The first parameter is the Custom Study curve formula itself. The second parameter identifies whether the Custom Study curve shares a scale.

Example: ShareScale(*custom study formula*, @) forces the curve to share the scale with the bar scale, identified by @.

Study Outputs cannot be changed within the **Curve Editor**. However, you can modify them by selecting the **Study Output** and then by selecting the **Setup** button to display the parameters.

When the cursor is placed on a **Study Output** or one of its parameters, the entire **Study Output** expression is selected. All or none of the **Study Output** expression must be removed at one time. Individual parts of a Study Output expression cannot be removed.

The clipboard can be used to cut and paste text into the **Curve Editor**.

To add a custom study to a chart with the Study button

1. Click the **Study** button in the **Chart** toolbar to display a list of available studies including Custom studies.
2. Click the desired **Custom Study Names** to select those studies. Custom study names appear with the symbol **"^"** following the abbreviated study name.
3. Click the **Add** button to add the selected studies to the **Chart** window.

To place a custom study button on the Chart toolbar

Individual **Custom Study** buttons can be placed on the **Chart** toolbar to access frequently used studies. After a study button is placed in the **Chart** toolbar, the button can be used to add/remove the associated study to/from the active chart window.

1. Click the **Study** button in the Chart toolbar to display a list of available studies.
2. This displays the Tabbed version of the **Add Study** window.
3. Click the **Custom Studies** tab.
4. Click the Custom Study Abbreviation to the left of the custom study name to add the corresponding **Custom Study** button to the Chart toolbar. Custom study names appear with an **^** following the abbreviated study name.
5. Click the study name itself and the **Add** button to display the study on the active chart without adding a button to the toolbar.
6. Click the study abbreviation name and the **Add** button to add the custom study button to the toolbar and the study curves to the current chart.

Once a custom study button has been placed on the Chart toolbar, it can display the associated custom study.

1. Click the button with the desired study name to display the associated custom study.
2. Right-click the button of the desired Custom Study to remove the associated study if it is currently displayed.

To change the parameters of a Custom Study

1. Move the mouse pointer to a custom study line. When the mouse text appears:
2. Right-click the custom study line to display a menu.
3. Click **Modify ...** to display the **Setup Study Parameters** window for the custom study.
4. Click the parameter setting to change.
5. Enter a new parameter value, or
6. Select the **Drop Down List** button, where available.
7. Click the **OK** button to apply the changes to the custom study and close the Setup Study Parameters window.

While display parameters for the custom study can be modified in the Setup Study Parameters window, study curve formulas must be modified in the Define Study window.

To remove a custom study

1. Move the mouse pointer so that it points to a custom study line and the mouse text appears.
2. Right-click to display a menu.
3. Click **Remove Custom Study Name**

You can also right-click the associated custom study button to remove the study.

To use a MATLAB® function in a custom study

CQG, in conjunction with The MathWorks™, has integrated CQG IC and MATLAB by developing a communication channel between the applications using CQG's API. MATLAB functions are used within CQG custom studies. You can incorporate an existing MATLAB function or create your own.
You call the MATLAB function through CQG IC, MATLAB serves as the calculation engine, MATLAB returns the results to CQG IC, where you can view them and integrate them into your conditions, trade systems, charts, etc.
In CQG IC, add the MATLAB function to your custom study, using this syntax:
MatLab(@, <array>, <MATLAB function>, <data sources>, <numeric input>)
For example: **MatLab(@, 100, my_matlab_function, Close(@), Open(@), High(DD), 1.5, 3.2)**
That is, for my_matlab_function, return an array of 100 closes of the source chart, an array of 100 opens of the source chart, and an array of 100 highs of DD using numeric inputs 1.5 and 3.2.

Parameter	**Description**
MatLab(@	Constant way that all MATLAB-associated formulas must begin.
Array	Size of the data array. Must be at least 1. For example, if you want 100 bars of the moving average returned, then this value would be 100.
MATLAB function	Name of MATLAB function to call.
Data Sources	Data sources to collect data from. All inputs after function and before first numeric input are treated as inputs to populate data array.
Numeric Input	All numeric inputs after data sources are considered parameters to be passed to MATLAB function.
)	Constant closing parenthesis.